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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,622	02/23/2004	Daniel Davidson MacFarlane Shearer III	2325-1-3	2972
996 7590 05/02/2007 GRAYBEAL, JACKSON, HALEY LLP 155 - 108TH AVENUE NE SUITE 350 BELLEVUE, WA 98004-5901			EXAMINER TU, JULIA P	
			ART UNIT 2611	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/785,622

Applicant(s)

MACFARLANE SHEARER ET AL.

Examiner

Julia P. Tu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-25 is/are allowed.
- 6) ☒ Claim(s) 1,4-6,26,27,34,35,40 and 41 is/are rejected.
- 7) ☒ Claim(s) 2,3,28-30,32,33,36-39 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because in the drawing figure 3, PHACZ and PHADJZ are not described in the specification; instead, the specification describes PHAC2 and PHADJ2; therefore, the examiner suggests to change "PHACZ and PHADJZ" in figure 3 to "PHAC2 and PHADJ2". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Objections***

2. Claim 33 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 31. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 4, 6, 26, 27, 31, 34, 35, 40, 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (US 2003/0123582).

(1) with regard to claim 1:

As shown in figure 16, Kim discloses a carrier tracking circuit, comprising:

a first phase adjustment circuit having a phase adjustment input, an input sample input, and an output (block 90 or 92 in figure 16);

a delay element having an input coupled to the output of the first phase adjustment circuit and having an output (block 60 or 62 in figure 6);

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a second phase adjustment circuit having a component input coupled to the output of the delay element, a phase adjustment input, and an output (block 68 or 70 in figure 16); and

a phase correction circuit (blocks 72, 74, 84, 86 in figure 6) having an input coupled to the output of the second phase adjustment circuit (see the input of block 68 or 80 coming from blocks 74, 76, 80) and a first output coupled to the phase adjustment input of the first phase adjustment circuit (see the input of block 90 or 92 coming from blocks 74, 78, 82), the phase correction circuit including a double phase correction circuit having an input coupled to the first output and having a second output coupled to the phase adjustment input of the second phase adjustment circuit (see block 74 in figure 17).

(2) with regard to claim 4:

Kim further discloses the delay element comprises an FFT element (blocks 60, 62 in figure 6).

(3) with regard to claim 6:

Kim further discloses the first phase adjustment circuit further comprises a step phase adjustment circuit adapted to receive a phase step factor signal (page 11, paragraphs [0112] and [0113]).

(4) with regard to claim 26:

As shown in figure 16, Kim discloses a method of correcting for frequency offset in a communications system that communicates data symbols, the method comprising:

generating a first group of frequency components that correspond to a data symbol by applying an FFT algorithm to a group of time domain input samples that correspond to the symbol (block 60 or 62 in figure 16);

calculating a phase adjustment value from the group of frequency components (block 72 in figure 16);

adjusting the phase values of subsequent groups of time domain input samples corresponding to subsequent symbols in using the calculated phase adjustment value for a prior symbol, the phase values of the subsequent time domain input samples being adjusted prior to applying the FFT algorithm to these input samples (block 90 or 92 in figure 16);

adjusting the phase values of the groups of frequency components generated by the FFT algorithm for a given symbol using the phase adjustment value calculated from the frequency components of a prior symbol (block 68 or 70 in figure 16); and

when a given symbol has the phase values of the corresponding time domain input samples adjusted using the phase adjustment value calculated from a particular prior symbol, compensating for this adjustment to the time domain input samples when adjusting the phase values of the group of frequency components corresponding to this given symbol (block 74 in figure 17).

(5) with regard to claim 27:

Kim further teaches adjusting the phase values of the group of frequency components for a given symbol using the phase adjustment value calculated from that group of frequency components (figure 16).

(6) with regard to claim 31:

Kim further teaches each of the symbols comprises an OFDM symbol (page 3, paragraph [0047]).

(7) with regard to claim 34:

As shown in figure 16, Kim discloses a method of correcting for frequency offset in an OFDM communications system that communicates OFDM symbols, each OFDM symbol including a plurality of corresponding time domain input samples and a plurality of corresponding frequency components generated by applying a frequency analysis algorithm to the time domain input samples, each time domain input sample and each frequency component having an associated phase and magnitude (page 3, paragraph [0047]), the method comprising:

calculating a phase adjustment value from the frequency components of each OFDM symbol (see blocks 72, 74, 84, 86 in figure 16);

adjusting the phases of the time domain input samples of at least one prior OFDM symbol using the calculated phase adjustment value for a prior OFDM symbol prior to applying the input samples to the frequency analysis algorithm (see block 90 or 92 in figure 16, page 12, paragraph [0117]);

adjusting the phases of the frequency components of at least one prior OFDM symbol using the calculate phase adjustment value for a prior OFDM symbol (see block 68 or 70 in figure 16, page 12, paragraph [0117]); and

adjusting the phases of the frequency components of a given OFDM symbol using the calculated phase adjustment value for that OFDM symbol (see block 68 or 70 in figure 16).

(8) with regard to claim 35:

Kim further teaches the frequency analysis algorithm comprises an FFT algorithm (block 60 or 62 in figure 16).

(9) with regard to claim 40:

Kim further teaches compensating for double phase correction of both the time domain input samples and the frequency components of a given OFDM symbol by the same calculated phase adjustment values (see block 72 in figure 16).

(10) with regard to claim 41:

Kim further teaches subtracting the phase adjustment value generated from the particular prior symbol from a current phase adjustment value and using the difference to adjust the phases of the frequency components corresponding to the particular symbol when these components are output from the frequency analysis algorithm (see blocks 72- 86 in figures 16 and 17).



***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 2003/0123582) in view of Heegard et al. (US 2002/0176520).

Kim discloses all of the subject matters in claim 1 above but is silent about the first and second phase adjustment circuits comprises a numerically-controlled oscillator. However, phase adjustment circuit comprises a numerically-controlled oscillator is well known in the art as it is evident by Heegard (page 1, paragraph [0017]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Heegard into the teaching of Kim so as to quickly and accurately estimate the initial values of the state variables of a phase-locked loop as well as to reduce the acquisition period (page 1, paragraph [0004]).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julia P. Tu whose telephone number is 571-270-1087. The examiner can normally be reached on 7:30 to 5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.T.  
04/27/2007

  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER